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# Work Analysis in Library Technical Services

Kitti Canepi

*Southern Illinois University Carbondale*, [kcanepi@lib.siu.edu](mailto:kcanepi@lib.siu.edu)

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## **Work Analysis in Library Technical Services**

**ABSTRACT:** This article summarizes a workflow and task analysis of technical services functions conducted at Southern Illinois University Carbondale's Morris Library during the 2005-2006 academic year. During the workflow analysis, procedures were identified that could be modified or eliminated and awareness was raised about the role of the various sections. The task analysis documented current practices, revealed differences in the way faculty and civil-service staff members spent their time, and informed changes to staff work assignments.

**KEYWORDS:** Workflow, task analysis, technical services, change, staff management

## **Work Analysis in Library Technical Services**

The changing environment of library technical services given the rise of electronic resources and concurrent reduction in staffing levels makes periodic workflow and job task re-evaluation advisable.<sup>1</sup> The Information Resources Management unit at Southern Illinois University Carbondale (SIUC) Morris Library involved staff in a work-analysis project conducted during the 2005-2006 academic year. The idea for conducting a work analysis was sparked by planning for a library renovation project. New floor plans for both temporary spaces where the unit would be relocated during the renovation and the planned renovated space were arranged in consideration of how materials physically moved through the unit. Discussion of this flow, along with a redesign of the unit Web site, highlighted the need to document the sequence of technical services processes. The goal of the work-analysis project was to map current processes and identify any areas where workflow could be improved or staff time and talents used more effectively.

### **Background**

Technical services at Morris Library was named Information Resources Management (IRM) as part of a library reorganization that consolidated the cataloging, ordering, preservation, and serials units into one. In the new unit, ordering was renamed Acquisitions, and serials functions were divided between Acquisitions and Cataloging staff. The IRM unit was placed within Library Support Services, one of two new sections that each reported to an Associate Dean.

At the time of this project, IRM had five faculty members (two associate professors and three assistant professors) and fifteen civil-service staff at various classification levels: one library operations associate, eight senior library specialists, four library specialists, and two library technicians. The head of IRM, acquisitions librarian, cataloging librarian, electronic resources librarian, and special formats cataloger were all tenure-track faculty positions. A faculty position for a special collections cataloger was open at the time of the study. The acquisitions group, managed by the acquisitions librarian, contained five full-time civil-service staff: two who handled monographs, two who worked with serials, and one who handled claims and gift materials. Four of the five people also supervised at least one student worker. In addition to the cataloging librarian and the special formats cataloger (maps, music, and serials), the cataloging group contained seven civil-service staff: five who handled copy cataloging for monographs, one who worked with serials, and one who coordinated catalog maintenance and supervised two to four cataloging student workers. At the time of the study, the acquisitions and cataloging librarians each also supervised one graduate assistant. The preservation group was supervised by a senior-level civil-service position and included two civil-service staff who handled marking and bindery preparation respectively, each also supervising one or more student workers. The preservation supervisor also managed the conservation lab, including supervision of two or more graduate assistants and an average of six to eight student workers.

## **Literature Review**

Jonassen, Hannum, and Tessmer defined task analysis as a process that is performed “to determine the operational components of a job, skill, goal or objective.”<sup>2</sup> There are numerous

methodologies and tools available for conducting task-based work analysis. A certain amount of ambiguity arises within the process from the types of tasks being analyzed, the variety of situations in which the process is used, and the varying skill levels of the people doing the task analysis, but Jonassen and associates indicated that reducing this ambiguity completely would eliminate options and over-proceduralize decisions.

Lugg and Fisher suggested starting any work analysis by looking at current day-to-day operations.<sup>3</sup> This approach can help validate previous staff efforts, recognize staff skills and needs, and allow for input from the people who may best know where change is needed. They indicated that it is important for tying activities and planning together, thereby helping staff members see their role within larger organizational goals. Evangelista and Burke indicated that making changes to tasks can be just as beneficial when processes are fully functional as when there are problems, since it can help enhance the meaning of work for staff.<sup>4</sup> According to Wrzesniewski and Dutton, perceived employee control over aspects of the job is a strong predictor of job satisfaction.<sup>5</sup> Employees tend to make changes in the task and relational boundaries at work over time to fit their own need for control, positive self-image, and connection to others. Actively involving staff in work redesign processes provides the employee an opportunity to legitimize this normal job crafting behavior, buy into organizational goals, and potentially alter the job in ways that benefit the organization.

A pair of studies at the University of Western Australia ascertained that another important ingredient in job satisfaction is a perceived greater opportunity for skill utilization; therefore, better utilization of staff skills is another reason for undertaking work analyses.<sup>6</sup> The Australian studies also reinforced the importance of employee involvement in job redesign programs.

At the University of Texas Southwestern Medical Center Library, a task force assigned to evaluate organizational efficiency focused on how time was currently spent and how it should be spent in the future in order to focus on changes needed to help fill the gap.<sup>7</sup> The job inventory they created for staff included a task list of the top six major tasks/responsibilities in order of the amount of time spent (expressed as a percentage), an indication of the three most important activities, a descriptive recommendation on how the library could make better use of the staff member's time, and a list of any team or task force memberships. In 2001, four Chicago-area public libraries received a Library Services and Technology Act grant to develop and apply a model for analyzing work performed in their libraries.<sup>8</sup> Aided by a project consultant, each library appointed a design team to conduct workflow analysis, create process maps to document workflow processes, and recommend changes. Each team developed a different approach, including adding staff interviews, document review, work-pattern observation, and surveys or questionnaires. In addition to initiating changes within the library, the project produced a handbook for other libraries to use.<sup>9</sup>

Flowcharting and a “bottom up” approach to workflow analysis were used at the McMaster University Library, including detailed charts covering sequences such as searching for catalog records and physical processing of materials (87 flowcharts in all).<sup>10</sup> Groups of sequences were then analyzed for inefficiencies. A workflow assessment by East Carolina University's Joyner Library focused on the time and path by which materials moved through the technical services area.<sup>11</sup> The study was intended to both identify any needed improvements and to establish a baseline against which to measure any future changes.

## **Methodology**

Information culled from the literature search influenced planning for the work-analysis project at SIUC. Of particular interest for incorporation were three main concepts: empowering staff to conduct the analysis and recommend changes that affected their jobs, examining both workflow for overall unit efficiency and individual tasks for better use of staff time and talents, and establishing a baseline against which future change could be measured.

Based on unit discussions during the planning for the new physical spaces and the redesign of the Web site, a draft workflow for the handling of monographs (excluding maps and special collections materials) was created and brought to a unit staff meeting for review by the entire group. The major processes that took place from the time a request for material was received until the item was sent to the circulation area for shelving were discussed and modified as needed. Ways to streamline the process were identified and noted and the resulting list of steps was typed up and distributed back to the staff for review. Using the open-forum venue allowed staff from other areas within the unit to learn more about the work undertaken by their co-workers.

Along with the modified workflow, a workflow survey was distributed in which each employee was asked to indicate where his or her position fitted within the workflow, which of his or her job tasks were associated with the elements listed, where any of his or her work tasks that were not listed would fit in the sequence, and what other exceptions to the workflow were not listed. The survey was intended to bring forth workflow elements that might have been missed during the group process.

Following the workflow project, the unit undertook the task-level analysis component. The shift of journal subscriptions from print to online was already having an impact on

workloads, and documenting the current process was seen as enabling future evaluation of the effects of these changes. A job inventory questionnaire on the University of Utah Division of Human Resources Web site seemed to capture the main points of interest.<sup>12</sup> It included space to rank tasks, list time percentages, and answer questions related to supervision, responsibility, decision making, and problem-solving. The final two questions of Utah's original questionnaire were replaced by questions related to tasks potentially below grade-level, suggested new tasks, and training needed in order to perform the potential new tasks. The inclusion of these points was based on interest by a few individuals in assuming additional responsibilities. To address potential workload balance issues, it was considered important to include identification of tasks that could be delegated to others in place of any new assignments.

In order to help staff ascertain what tasks they performed on a regular basis and what percentage of time they spent on those tasks, a worksheet was created to track daily activity starting and ending times. Formulas in the electronic version of the worksheet calculated the time for each activity, and the percentage of the total per activity. A one-hour training session was held to explain the purpose of the instrument and how to use the tools. Individuals were encouraged to record start and end times of each activity on a printed version of the worksheet, entering the data in the online form afterwards. Everyone was asked to track activities for a minimum of five days. The days did not need to be consecutive, and tracking for up to ten days was encouraged. A second worksheet tool provided space to list groups of similar tasks, the total percentage of time for each group, the activity's priority ranking in terms of importance, and the task's applicability as an example of supervision, responsibility, decision making, problem-solving, or tasks potentially below grade-level. The information from this second worksheet could then be transferred to the questionnaire and expanded upon as necessary. Initial



apprehensions about possible job changes were addressed by reassuring staff there was no pre-existing plan and that they would be involved in any outcomes. Staff members were informed that the details of the task questionnaire results would be shared only with the Head of IRM and their individual supervisors.

## **Results**

When the workflow in IRM was mapped out, the successful arrangement of the temporary physical spaces was verified. By holding group sessions to review the workflow involving all staff members, individuals expressed that they had gained a better understanding of the activities performed by their colleagues.

The final acquisitions portion of the workflow for monographs followed the process from receiving a request for purchase through placing an order, selecting and downloading an OCLC bibliographic record (or creating a short record), creating a purchase order in the integrated library system (ILS) client, receiving and unpacking the item, verifying that the item in hand matched the bibliographic record and purchase order, and finally pre-processing the material with property stamp, tattletape, and barcode before delivering the material to cataloging.

The cataloging portion of the workflow included checking the material against the descriptive information in the bibliographic record, replacing short records as needed, creating an item record, checking subject headings and call number (or adding them if not present), adding other holding information (e.g., copy number and volume), penciling the call number in the book with a notation of any accompanying material, and updating the location and item type information. The item then proceeded to marking.

The marking portion of the workflow included screening paperbacks for sending to the bindery, printing call-number labels, placing labels on the material, adding flags for accompanying materials, performing additional processing for non-book formats, identifying items needing bookplates, and sending items to circulation, reserves, or other location for shelving.

During the group review of the workflow, several procedures were identified that could be eliminated, such as using different color ink for stamping different types of materials and putting multi-color marker stripes on the edges of periodicals (used prior to having a security system to help circulation staff identify journals in book bags). Before ceasing the latter, approval was first received from the associate deans. It was also determined that acquisitions personnel could be trained to perform pre-processing of non-book formats such as CDs and DVDs that had previously been sent to marking for that purpose, thereby eliminating an interruption in the normal flow of materials.

Several suggestions for improving the workflow survey instrument also emerged. They included combining the questions about workflow elements and individual tasks, because the two seemed to overlap, and eliminating the question about where a job position fit into the workflow, as it was judged redundant.

The task-analysis process verified that personnel were generally performing tasks suited to their job positions and to the workflow steps related to their group. This was the first opportunity most of them had to consider how their workday was parceled out among various responsibilities. A few individuals remarked on the irony of spending time documenting how they spend their time.

Different levels of understanding about how the questionnaire information was to be used resulted in disparity in the way workflow tasks were reported. Some staff members reported their tasks from the perspective of the software used when performing the task (the integrated library system, the bibliographic utility or a vendor system), while others focused on the format (books, CD's, maps, etc.). Some individuals also reported their tasks by broad categories (e.g., cataloging), while others listed the tasks in more detail (e.g., search, import, edit). This inconsistency made it difficult to compare workflow tasks within or between groups.

Besides tasks related to workflow, the study revealed the myriad of other tasks that people performed as part of their jobs. These fell into general categories of communication (email, meetings, consulting with others), supervision, special projects, problem-solving (including responding to requests for information), activity tracking (statistics, time sheets, procedure writing), research (including keeping current on rules, guidelines, and advances in the field), committee work, and outreach (attending library events, giving presentations, writing for the library newsletter). The only one of these categories for which tasks were reported by every employee was communication.

The questions addressing responsibility and problem-solving were used by a few staff members as an opportunity to justify the level of work currently performed. For example, as an indication of how a particular problem was resolved, instead of indicating a procedure one staff member wrote "through fast efficient operation." In describing the impact of the work they do, some staff members indicated the need to get the job done or the impact on other staff, while others clearly saw the impact on library users, either through the provision of materials in a timely manner or through providing accurate information about the materials. This indicated more efforts were required to enable staff to clearly envision the needs of the end user.

The results of the task analysis revealed both differences and similarities in the way that faculty (librarians) and civil-service staff spent their time. On average, faculty spent a larger percentage of time on communication tasks (reading/responding to email, attending meetings) than did staff (21.67% to 9.32%). This was not surprising given that faculty members are expected to take a more active role than civil-service staff with library committees and professional discussion lists. On the other hand, the average time spent on supervision for those with supervisory responsibilities were very similar between the two groups (15.26% for faculty and 15.11% for staff). Within all of the supervision time averages, however, was a wide range of individual percentages, from 4 to 50 percent. For some, supervision involves checking the work of others; these supervisors spent a far greater amount of time on supervisory tasks than those who simply assign tasks and answer questions as needed. Thus the nature of the supervising seemed to have a greater impact on supervision time than the number of people supervised, the job level of those doing the supervising (faculty or civil-service staff), or the job level of those being supervised (faculty, civil-service staff, or student workers). It should be recognized that because the study reflected a snapshot of current tasks, those completing it did not necessarily account for supervision tasks that occur infrequently, such as hiring and evaluating. With the high dependence on student workers, repetitive hiring and training time due to turnover can have an impact.

As stated previously, some staff reported broad categories for regular workflow tasks such as cataloging or database maintenance, while others reported more specific actions such as editing, fixing, searching, selecting, comparing, and assigning. The varying degree of specificity made it difficult to compare and average those types of tasks. Still, it was clear that faculty workflow tasks generally related to cataloging, database maintenance, request/order placement,

or vendor coordination/negotiation, while civil-service staff tasks fell into sixteen different categories. Only one faculty member reported workflow-related tasks equal 70 percent of their work time with the next highest at 46 percent. For seven of twelve civil-service staff members, however, workflow tasks accounted for 74 to 100 percent of their work time. This again reflects the differing requirements for those in faculty versus civil-service positions. Both faculty and civil-service staff who manage work groups spent less time on workflow-related tasks than non-managers (2 to 12%).

The average percentage of time spent on special projects was almost the same for the two groups: 23 percent for faculty and 23.9 percent for staff. The task descriptions revealed that the same types of actions were performed for special projects as for regular workflow tasks (e.g., searching, comparing, editing). The major difference seemed to be that the focus of special projects was not on moving materials through the workflow, but on improving access to, or information about, materials. Database maintenance (referring to either the library catalog or a vendor's knowledge base) was listed by many staff members as a separate task, but it also involved functions similar to those performed during workflow tasks such as comparing and editing. This suggests that the questionnaire would be improved by requiring tasks to be defined in more detail. Standardization in the reporting would also allow easier averaging and comparing.

The IRM faculty reported performing tasks related to research, including keeping current in the field and planning, at an average of 15.34 percent. This was seen as a positive result given the expectations for faculty to be allocating time on a regular basis for these activities. Only two of the twelve civil-service staff reported this task. Four out of the five faculty reported time spent on tracking tasks (compiling statistics, checking timesheets, and writing procedures) at an

average of 4.58 percent, while only three staff members reported this task at an average of 3 percent on average. For the time period of this study, committee-related tasks were reported by three out of five faculty and two out of twelve staff. Service is an important component of faculty work, while it is considered just one of many ways to demonstrate cooperation and teamwork for civil-service staff, so this result was not unexpected. Four faculty reported problem-solving tasks with a percentage of time ranging from 5 to 27 percent. Four civil-service staff reported problem-solving tasks with a range of time from as little as 2 percent up to 80 percent. Most library professionals would not be surprised to learn that the person who spent the most time problem-solving worked with serial materials.

Questions that arose as staff went through the task-analysis process indicated several flaws in both the instrument and the training. Staff had been encouraged to group similar types of tasks together in order to end up with a list of five or six tasks. Examples were given but not specific guidelines, leaving it up to staff to determine which tasks were similar. Some individuals grouped disparate types of tasks together and had to be asked later to break out the grouped information. Some chose not to group tasks at all, thereby ending up with very long task lists. A revised questionnaire could include a list of categories to check off rather than asking individuals to determine how to group tasks together. Many staff members also expressed uncertainty about the relationship between processes identified in the workflow and tasks they listed on the questionnaire. This indicates a need for better clarification and a closer alignment between the two parts of the process. Another training issue was the assumption of familiarity with using Excel spreadsheets, which was not as universal as originally thought and required some one-on-one training.

## **Outcomes**

As a result of this study, supervisors discussed with individuals various task changes to increase workflow productivity. These changes primarily involved reducing steps to save time, minimizing the number of times work was rechecked, or reassessing the need for non-workflow tasks. Some individuals easily assimilated the suggested changes, while others found it more difficult to stop doing things the way they were used to doing them, requiring additional coaching at several points. Those individuals who identified responsibilities they wished to take on were accommodated to the extent possible. For some, training needed to be scheduled to enable them to perform the new tasks. A few were advised that the desired tasks were outside the scope of their position or that current productivity needed to be improved before any requested new duties could be assigned. Most of the tasks identified as below grade-level were tasks that student workers usually did when present. Individuals who identified these were encouraged to hire more student workers to whom they could delegate these lower-level tasks.

The task analysis also provided a venue for supervisors to discuss the impact of switching subscriptions to online-only format with staff who worked directly with serials publications. While the electronic resources librarian was increasingly burdened by the day-to-day maintenance of online journals, there was less demand on staff time for the physical handling of print periodicals. Determining subscription date coverage and accessibility were becoming particularly problematic and time consuming. The library administration was looking for an opportunity to move a civil-service staff position into IRM to help with managing electronic resources, but it was recognized that other staff would need to take on new responsibilities as the number of print journals decreased and the demands of maintaining online subscriptions grew.

The outgrowth of these discussions was new assignments for staff in claiming, bindery preparation and holding records maintenance, and ongoing plans for additional sharing of online journal subscription-related duties.

A number of staff members expressed a desire to fill out the task questionnaire again in six or eight months; some because the tasks they perform vary depending on the time of year, others because they thought they might “do it better” next time. Staff agreed to repeat the task analysis process the following spring. The lessons learned from the initial experience will inform revisions to the questionnaire prior to redistribution.

### **Conclusion**

Both initial goals of the work analysis project were met. Examining both workflow and individual tasks successfully documented current activity in IRM, while also identifying several ways to improve both unit and individual efficiency. Empowering staff to conduct the analysis provided an opportunity for individuals to better understand the work they do and how it contributes to overall unit goals. The heightened awareness of individual roles is expected to have a positive residual effect on job satisfaction, as well as on cooperation and cohesiveness within the unit.

The study verified the impact of shifting from print to online journal subscriptions, influencing subsequent work assignment changes and making those changes more palatable. Questionnaire results revealed differences and similarities in the way faculty and civil-service staff members spend their time and the influence of work review on supervision. Changing staff tasks as a result of the work analysis allowed for more effective use of staff time and talents to



meet organizational needs. Additionally, establishing a baseline for technical services processes will better enable the unit to measure future changes.

## NOTES

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